

order is thus, according to these observations, in a constant state of change of development, of maturity and atrophy; this series of changes being in rapidity directly proportional to the profuseness of the secretion.

In the second order of glands, the follicular, as exemplified in the liver of *Carcinus Mænas*, the germinal cell or spot is situated at the blind extremity of the follicle, and the cells produced from this spot, as they advance along the follicle, become distended with their peculiar secretion.

Among other general conclusions deducible from these observations, it appeared that ducts are intercellular passages, into which the secretions formed by cells are cast.

Finally, the author inferred, from the whole inquiry, that, 1st, secretion is a function of, and takes place within, the nucleated cell; and that, 2nd, growth and secretion are identical,—the same process under different circumstances.

MISCELLANEOUS.

NOTES ON MARINE ANIMALS.

June 24th, lat. N. $36^{\circ} 9'$, long. W. 164° , some brown-looking masses are floating about the ship; they are numerous, and appear like fragments of sea-weed. On catching some they proved to be a species of *Anatifa*. They are grouped together in bunches, and on examining them for the marks of attachment to a foreign substance, I thought I could distinguish these in two of the smaller masses, but on searching the larger carefully they were not visible.—25th. We have traversed 120 miles since yesterday, and the *Anatifa* still continues. The temperature of the sea has been from 61° to 65° , and of the air about 65° , throughout the twenty-four hours. We caught more today, and also finer specimens; they are undoubtedly without a place for attachment to a foreign body, for I have again examined them carefully. The water is likewise full of minute animals of the most lively motions.—27th. Lat. N. $43^{\circ} 3'$, long. W. $164^{\circ} 9'$. The *Anatifa* still continues, and since the 24th we have unceasingly been passing through them. Night and day they continue the same, and are surprisingly numerous. According to the log, we have now travelled 332 miles among them. After sunrise this morning the surface of the sea was observed to be covered with multitudes of *Velilla*. For the last eight hours, moving at the rate of three miles and a half in the hour, they have been equally numerous. The curious and beautiful processes at their base have among them a great number of small gelatinous animals, but apparently without motion. One of them had a mass of small *Anatifa* within its gripe. Our course, since we have been among these animals, has been northerly with a little occasional zigzag deviation. I feel pretty certain that this is a large assemblage of *Anatifa*, which in all probability have lived here a considerable period, and continue to grow and increase their numbers whilst floating on the surface. Our course being in the direction to

increase our latitude, it would seem probable that we are traversing their smallest diameter, as it is most likely that they would spread in the direction of the latitude, and it is then easy to comprehend what a vast extent of surface they must cover, and the countless multitude of the individuals. The temperature of the water today is 59° , the air remaining at 65° .—28th. The *Anatifa* ceased as above. The *Vevelia* still continues, and are generally very fine specimens. We have travelled eighty miles since midday yesterday and have not missed them. Some *Beröe* are among them. The *Anatifa* has partially reappeared, but is scarce. I have also discovered a group of them attached to the skeleton of a *Vevelia*: they have evidently been here a long time, as some had attained a good age.—29th. The *Vevelia* ceased last night, having continued around us for 101 miles. Yesterday we passed through a compact bed of them, which at a distance had a fine grass-green colour.

On July 27th, when going to the southward, in lat. N. $47^{\circ} 54'$, long. W. $127^{\circ} 1'$, we passed through the same *Vevelia* for several miles, though not so numerous as on the previous occasion.—HINDS, MSS.

OECONOMY OF THE WHALE.

To the Editor of the Annals of Natural History.

SIR,—The following questions have, I believe, been only imperfectly answered by physiologists: How does the Whale support the immense pressure he must bear at the depth in the sea to which he often dives? and what is the end to be answered by the blow-holes on the back of his head? It appears to me that both questions may be solved by one short answer, viz. he permits the water to enter his lungs as he dives to balance the pressure without, and spouts it out through the blow-holes by the aid of the air which expands in the lungs as he rises; the jet of water would impede his rising were it to pass from his mouth.—Yours, &c. J. D. C. SOWERBY.

NOTES ON SOME LIBELLULÆ. BY J. C. DALE, ESQ., F.L.S.

In your last Number (LVI.), p. 163, reference is made to the figure of the wing of a fossil Dragon-fly found in Warwickshire, Mag. N. Hist. vol. iv. New Series, p. 302, as the *Æshna liassina*, Strickl., where the wings of *Æshna grandis* and *Libellula depressa* are also given to show the difference in size and structure. The stigma on the wing shows it to be nearer to *Cordulegaster* and still more to *Petalura* 'Zool. Misc.', vol. ii. plate 94, where it is stated to be a native of New Holland; and I have a female of the same from Mr. Children's cabinet, which on comparison bears a close resemblance to the fossil fly.

I take this opportunity of making known as British the *Agrion pumilio*, Charp., having taken specimens in this neighbourhood many years ago; and although it may be mistaken for a variety of *A. elegans*, Vand. Lind. (*tuberculatum*, Charp.), at first sight, it is easily distinguished by the absence of the tubercle on the collar, immediately behind the head, so conspicuous in that species, and other

good characters. Charpentier states it to be the smallest European *Agrion* he has seen (though it is not very much smaller than *A. elegans*). I have one from the East Indies scarcely exceeding one half in size. It seems strange that the female of *A. aurantiacum*, Longch., figured by Mr. Curtis, should be unknown.

There seems great uncertainty as to many species of *Libellulæ* described by Linnæus, in consequence of his too great brevity.

Lib. ænea is given "thorace æneo-viridi," which would have done very well if no other allied species had existed; but he gives as a syn. from Fn. Suec., "thorace viridi nitido lineis flavis," which evidently belongs to another species. He also refers as a syn. of *L. rubicunda* (figured by Mr. Curtis) to Ray 50. n. 8, which I take to be only *L. vulgata*.

The continental authors seem at a loss for the *L. rubicunda* and *Æ. juncea*, both of which are in the Linn. cab., and I have taken both in England.

Moses Harris has figured in his 'Exp. Engl. Ins.' a fly which I take to be the *Criorhina apicata*, Megerl., but which *has been* erroneously referred to *C. ranunculi*, both of which I possess now, the former having been taken near Bristol last year, and formerly at Stepney. It is remarkable in its similitude to the *Bombus hortorum*. I have also added *Eristalis alpina*, Pz., from Scotland lately.

Glanville's Wootton, April 8th, 1842.

WHAT CONSTITUTES A GENUS?

To the Editors of the *Annals of Natural History*.

GENTLEMEN,—I should like to ask ornithologists, through the medium of your valuable Magazine, what characters are sufficient to constitute a Genus? and if there be any rule for beginners to go by? or if every person who chooses to write a book on birds is at liberty to make and mend as he thinks proper? and thus add to the general confusion—(this seems to be too much the case). I have been attempting to arrange a small collection, but I am often brought to a stand-still, as I cannot see the characters which have caused the divisions; for what seems to be sufficient in one case is not in another. This has often caused me to wonder if there were a general rule to go by; perhaps G. R. Gray, Esq., or Mr. Strickland, will favour me with answers to my questions. Mr. Gould seems to deal largely in *genera*,—perhaps he may favour your ornithological readers with an answer, if there are no secrets.

I am, yours respectfully,

Liverpool, March 24th, 1842.

H. G. I.

FURTHER REMARKS ON FIBRE. BY DR. MARTIN BARRY.

Dr. Barry examined the following objects, from two of the Molusca, at the desire of Professor Owen, who dissected them out for the purpose: namely, from the *Oyster*, the branchial ganglion, and the branch connecting it with the labial ganglion; from the *Loligo*, the optic and brachial nerves. In all of these Professor Owen recog-

nised filaments ("fibres") having the same remarkable appearance as those which Dr. Barry had previously shown to him in muscle.

On a subsequent occasion—several physiologists being present, one of whom was Professor Owen—there were seen muscular "fibrillæ," not only flat, grooved, and compound, but separated at the end into their single and simply *spiral* threads,—the really ultimate threads of muscle. In this instance chromic acid was substituted for the reagent above-mentioned (Annals, vol. viii. p. 546.) as usually employed by Dr. Barry in these researches: and for the examination of muscle he now finds the chromic acid to be even preferable thereto*.

To find the muscular "fibrillæ" of a size proper for examination, and so loosely held together that they may be separated with ease, the heart of a fish or reptile should be employed. Dr. Barry has used the heart of various fishes, as well as that of the turtle, newt, and frog—and chiefly the frog.

To find those states of voluntary muscle in which the transverse striae are produced by the windings of comparatively large interlaced spiral filaments (see abstract of the postscript to Dr. Barry's paper "On Fibre," p. 506), he recommends muscle from the tail of the *very minute* tadpole—when this larva is only 4 or 5 lines in length (as at the present season)—or muscle from the leg of a boiled lobster, as being very easily obtained. In these states of muscle, the interlacing spirals are seen to dip inwards, towards the centre of the fasciculus, in a manner that may be represented by making the half-bent fingers of the two hands to alternate with one another, and then viewing them on the extensor side.

To find the filament in red blood-discs, Dr. Barry recommends the blood of a batrachian reptile, such as the frog or newt, on account of the large size of the discs in these animals. The blood should be examined just before its coagulation, as well as at various periods during the formation of the clot. Dr. Barry has usually added one of the above reagents, or nitrate of silver.

TEMPERATURE OF COLD-BLOODED ANIMALS.

M. Dumas, in requesting the Academy to add some new members to the commission charged with the examination of the memoir of M. Valenciennes and of that of M. Lamarre-Picquot, from some remarks of M. Dumeril which seemed to require an extension of the discussion, stated that the question was, in fact, to consider a point of physiology of the highest interest; for we may conclude, from the investigation of MM. Lamarre-Picquot and Valenciennes, that certain cold-blooded animals may, in given circumstances, become warm-blooded animals, in the same way that certain warm-blooded animals, the hibernating animals, become, in given circumstances, true cold-blooded animals. The question then is, to clear up this point of physiology, and to ascertain whether, in the same way that certain warm-blooded animals are able to support a lowering of

* We are indebted to Dr. Hannover for bringing into notice the use of the chromic acid for such purposes.

temperature without perishing, there are cold-blooded animals that can support and produce an elevation of temperature without danger to their life.

Some new members having been added to the commission, M. Flourens took occasion to mention, that, along with M. Becquerel, he had made some experiments on the temperature of cold-blooded animals. These experiments were made on several reptiles, on lizards, serpents, Batrachians, &c., on several insects, and on some fish. The temperature of all these animals was taken by comparative means, namely, the thermo-electric apparatus of M. Becquerel and a very delicate thermometer, so that the results obtained may be looked upon as very exact.

The most general result of these experiments is, that the animals said to be cold-blooded have a temperature of their own, higher, that is to say, than the external temperature; so that they are really warm-blooded animals. The temperature of lizards is more elevated than that of the Batrachians, &c. A difference of temperature is even found in the same animal, according to what region of the body is examined: for example, the temperature of an adder is perceptibly more elevated taken near the heart than it is in the region of the tail.

M. Flourens adds that M. Becquerel has long since committed the physical part of this investigation to writing, and that he himself will soon prepare the physiological part, and lay the entire memoir before the Academy.—(L'Institut, No. 424.)

PALÆONTOLOGY:—RUDISTA.

A memoir by M. Alcide d'Orbigny, entitled, "Quelques considérations zoologiques et géologiques sur les Rudistes," read at the Academy of Sciences Jan. 31, is published in the 'Ann. des Sc. Naturelles' for March. It is summed up (L'Institut, No. 424) in the five following propositions:—

1st. The *Rudista* hitherto unknown in the inferior districts of the chalk formation, instead of being disseminated in the middle of the terrestrial strata, form successive depots, banks whose horizon is intersected; they may therefore be considered as the best marks which can be taken as limits of strata.

2nd. These distinct zones of *Rudista*, deposited in the middle of the same basin and in a succession of strata but little dislocated, as we see to the west of the Pyrenæan cretaceous basin, might prove that there was no need of great local disturbances to bring into the same place different fauna; but that, without doubt, other causes influenced this successive substitution of one fauna for another.

3rd. The *Rudista* have appeared five times at the surface of the globe in the cretaceous system, each time under entirely different forms, without there being any zoological passage in the species, or transfer of individuals from one geological zone into another. Thus the respective fauna of the five zones of *Rudista*, whether in distinct stages, or in beds of the same stage, have been successively annihilated and substituted by others wholly different, which would not evince in this series of beings any transition either of forms, or in the beds which contain them.

4th. The *Rudista*, divided by distinctly marked zones in the middle of the cretaceous districts, form therein more or less extended horizons, and always in the same respective position in relation to the other fossils.

Hence the distribution of beings in the terrestrial strata would not be due to chance; but, as M. d'Orbigny has already found with regard to the Cephalopoda, it would be the result of the succession, in an invariable order, of fauna more or less numerous, the perfect knowledge of which is hereafter destined to furnish the chronological history of the ancient zoology of the globe.

RISSOA HARVEYI.

To the Editors of the *Annals of Natural History*.

DEAR SIRS.—The Supplementary Number of your interesting periodical has reached me, in which you have been pleased to insert a paper of mine, communicated to the Geological Society by James Smith, Esq. of Jordan-hill. Allow me to correct a mistake in which you had no share. It is stated (vol. viii. p. 515), that of the seventy species of marine shells found by me in the post-tertiary deposit at Largs, all were well-known inhabitants of the British seas, except two species of *Rissoa*; one of which had been previously found in the Crag, and the other had been referred, with doubts, to the *Rissoa Harveyi* of *Mr. Forbes*. I should have said, the *R. Harveyi* of *Mr. Thompson* of Belfast, by whom it had been figured and described in a former vol. of the *Annals* (v. p. 96), and named in honour of Mr. Harvey, the distinguished naturalist who discovered the shell.

I am happy to add that my doubts have been completely removed. I sent a specimen of the subfossil shell to Mr. Thompson, your very intelligent correspondent; and by return of post he says, "the subfossil is the veritable *R. Harveyi*, which I of course was much gratified to see, two examples only of the recent shell having hitherto been found." It is a remarkably beautiful little shell, and I am glad that the subfossil specimens already outnumber the recent examples, as two or three have been found by myself, and as many by the Misses Mure of Warriston, whose sweet residence is adjoining to the post-tertiary deposit. Though the other shells were known, there were several of them of considerable rarity; such as *Cardium serratum*, of which only one valve was found; *Bulla truncata*, *Phasianella tabulata*, *Rissoa cimex*, *Rissoa costata*, *Rissoa calathisca*, *Rissoa striatula*, *Cemoria Flemingii*, &c.

Stevenston Manse, Ayrshire,
18th April, 1842.

Yours sincerely,
D. LANDSBOROUGH.

NIGER EXPEDITION.—MR. FRASER.

The letter from Mr. Fraser, the naturalist to the Niger expedition, dated from the mouth of the river Nün, W. Africa, August 14, 1841, read at the meeting of the Zoological Society, Dec. 14, which we noticed in our number for January, contains some interesting facts relating to the habits and habitats of certain animals. Among the

skins of Mammalia, Mr. Fraser observes, he had forwarded a *Galago* which was shot at Cape Coast, close to the town, in a tamarind tree, where he also found its nest, built, or rather laid, in a fork formed by the branches. The nest was composed of loose leaves. The animal resembled the *Loris gracilis*, but its limbs were stouter. The following monkeys, Mr. Fraser states, appear to be found in the neighbourhood of Sierra Leone: *Troglodytes niger*, *Colobus ursinus*, *Cercopithecus fuliginosus*, common, *Cerc. Sabaeus*, and *Cynocephalus Papio*. The banks of the beach are everywhere perforated with large round holes, which the natives informed Mr. Fraser were inhabited by an animal which they call the Ground-pig, which is the *Aulacodus Swinderianus* of Temminck. At Bassa, the author of the letter saw some skins of *Cercopithecus Diana*, said to be common in that district; he also saw a skin of an antelope, apparently the *Antilope Ogilbyi*, Waterh. At Cape Coast the *Cercopithecus petaurista* is to be found, and likewise the *Colobus leucomeros*. Skins of the last-mentioned animal as well as of the *Cercopithecus Diana* were extremely plentiful at Accra.

Part X. of the SCIENTIFIC MEMOIRS is just published; and contains amongst others, the following translations from the German, connected with Natural History:—On the Distribution of Temperature on the Surface of the Earth; by Prof. Dove of Berlin.—On the Azotized Nutritive Principles of Plants; by Prof. Liebig:—and on numerous Animals of the Chalk Formation still found in a living state; and of the organization of the Polythalamia; by Prof. Ehrenberg.

OBITUARY:—DR. THEODOR VOGEL.

Science has to deplore, in the death of Dr. Vogel, the loss of a zealous and accomplished botanist, and an amiable man. We learn this melancholy news from a letter received from Mr. C. G. Roscher, dated on board the Albert, January 27. Hopes had been entertained that during his stay at Fernando Po he would have recovered from the effects of African fever, which had proved fatal to so large a number of those engaged with him in the disastrous expedition up the Niger; but as a consequence of his previous attack, and of his anxiety in any degree in his power to fulfill the purposes of his journey, he was seized with a dysentery, which, notwithstanding the careful attentions of Mr. Thomson, surgeon of the Soudan, and of Dr. M'William and Mr. Troschel, closed his earthly career on the 17th of December. His surviving fellow-travellers, by whom he was highly esteemed for his kind and generous qualities, and truly Christian virtues, committed his remains to the grave by the side of those of Captain Allen.

We learn that Dr. Vogel had diligently availed himself of the few opportunities which had been afforded him of extending botanical knowledge. He made an excursion of two days, in company with Dr. Stanger, from Accra to the Aquapin hills, where he collected many plants of great interest, several of which he considered as new;